ABSTRACT OF THE DISCLOSURE

A method and device for regeneration of a particulate filter situated on an exhaust line of an engine. The method determines a soot burden on the filter based on knowledge of a differential pressure ΔP at ends of the filter and triggers combustion of the soot when the burden reaches a predetermined level. A pressure Pdownstream downstream from the filter is modeled without use of a pressure sensor and Pupstream is determined without use of a pressure sensor using the relationship Pupstream = ΔP + Pdownstream. The burden is determined by the relationship ΔP = f (Qvol, mass of soot), with Qvol = K x (Qair + ρfuel x Qcarb) x N x Tupstream / Pupstream, where K is a constant, Qair denotes a mass flow of air, ρfuel denotes a density of the fuel, Qcarb denotes a volumetric quantity of fuel, N denotes an rpm of the engine, and Tupstream denotes an absolute temperature measured upstream from the filter.